

Amendment Dated 03/15/06
Response to Office Action Dated 12/15/05

Application No. 10/786,697

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

1. (Currently Amended) A multi-channel acoustic system comprising:

a first channel element that detects a first acoustic feedback component of a first acoustic signal and that processes the first acoustic signal from a first performance microphone to ameliorate the first acoustic feedback component, ~~wherein~~ the first acoustic feedback component ~~corresponds~~ corresponding to a first feedback path from at least one speaker to the first performance microphone, the first performance microphone and an associated acoustic source of the first performance microphone being located on a same performance stage;

a second channel element that detects a second acoustic feedback component of a second acoustic signal from a second performance microphone and that processes the second acoustic signal to ameliorate the second acoustic feedback component, ~~wherein~~ the second acoustic feedback component ~~corresponds~~ corresponding to a second feedback path from the at least one speaker to the second performance microphone, the second performance microphone and a corresponding acoustic source of the second performance microphone being located on the same performance stage; and

a communications pathway between the first channel element and the second channel element, wherein one of the channel elements informs another channel element about detecting acoustic feedback, and wherein the other channel element may continue searching for an associated acoustic feedback component while said one of the channel elements configures in accordance with determined filter parameters.

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2. **(Original)** The multi-channel acoustic system of claim 1, wherein the first channel element and the second channel element are functionally identical.

3. **(Original)** The multi-channel acoustic system of claim 1, wherein the first channel element comprises:

a first adaptive notch filter that detects the first acoustic feedback component; and

a first operative notch filter that attenuates the first acoustic feedback component as instructed by the first adaptive notch filter or the second channel element.

4. **(Original)** The multi-channel acoustic system of claim 3, wherein the second channel element comprises:

a second adaptive notch filter that detects the second acoustic feedback component; and

a second operative notch filter that attenuates the second acoustic feedback component as instructed by the second adaptive notch filter or the first channel element.

5. **(Original)** The multi-channel acoustic system of claim 4, wherein the second operative notch filter receives filter parameters from the first operative notch filter in response to the first adaptive notch filter detecting the first acoustic feedback component.

6. **(Original)** The multi-channel acoustic system of claim 1, wherein the second channel element receives filter parameters from the first channel element in response to the first channel element detecting the first acoustic feedback component.

7. **(Original)** The multi-channel acoustic system of claim 1, further comprising:

an additional channel element that detects an additional acoustic feedback component of an additional acoustic signal.

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8. **(Original)** The multi-channel acoustic system of claim 4, further comprising:
an additional channel element that detects an additional acoustic feedback component of an additional acoustic signal, the additional channel element comprising an additional operative notch filter.
9. **(Original)** The multi-channel acoustic system of claim 8, wherein the first channel element sends filter parameters to the second channel element and the additional channel element through the communications pathway, and wherein configurations of the first operative notch filter, the second operative notch filter, and the additional operative notch filter are interactive with each other.
10. **(Original)** The multi-channel acoustic system of claim 8, wherein the first channel element sends filter parameters to the second channel element and not to the additional channel element through the communications pathway, wherein the first operative notch filter and the second operative notch filter are interactive, and wherein the first operative notch filter and the other operative notch filter are not interactive.
11. **(Original)** The multi-channel acoustic system of claim 8, wherein the first operative notch filter comprises:
a control module that receives filter parameters from the second channel element or from the first adaptive notch filter; and
at least one constituent notch filter comprising a first constituent notch filter, wherein the first constituent notch filter is characterized by a first notch frequency and a first notch depth, and wherein the first notch frequency and the first notch depth are configured by the control module in accordance with the filter parameters.

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12. **(Currently Amended)** A method for ameliorating acoustic feedback in a multi-channel acoustic system, the multi-channel acoustic system comprising a first channel element and a second channel element, the first channel element being associated with a first acoustic channel and the second channel element being associated with a second acoustic channel, the method comprising:

(a) detecting, by the first channel element, a first acoustic feedback component, wherein the first acoustic feedback component corresponds to a first feedback path from at least one speaker to a first performance microphone, an acoustic source of the first performance microphone and the first performance microphone being located on a same performance stage;

(b) sending, by the first channel element, a first indicator that is indicative of the first acoustic feedback component to the second channel element;

(c) determining a first set of filter parameters;

(d) sending the first set of filter parameters to the second channel element; and

(e) adjusting the first channel element to ameliorate the first acoustic feedback component in accordance with the first set of filter parameters.

13. **(Previously Presented)** The method of claim 12, further comprising:

(f) receiving, by the second channel element, the first indicator from the first channel element;

(g) searching, by the second channel element, for a second acoustic feedback component;

(h) receiving, by the second channel element, the first set of filter parameters;
and

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(i) adjusting the second channel element in accordance with the first set of filter parameters.

14. **(Previously Presented)** The method of claim 13, further comprising:

(j) detecting, by the second channel element, the second acoustic feedback component;

(k) determining, by the second channel element, a second set of filter parameters;

(l) adjusting the second channel element to ameliorate the second acoustic feedback component in accordance with the second set of filter components.

15. **(Previously Presented)** The method of claim 14, further comprising:

(m) in response to (j), sending, by the second channel element, a second indicator that is indicative of the second acoustic feedback component to the first channel element.

16. **(Previously Presented)** The method of claim 14, further comprising:

(m) in response to (l), sending, by the second channel element, the second set of filter parameters to the first channel element.

17. **(Previously Presented)** The method of claim 14, further comprising:

(m) in response to (j), sending, by the second channel element, a second indicator that is indicative of the second acoustic feedback component to the first channel element; and

(n) in response to (m), sending, by the second channel element, the second set of filter parameters to the first channel element.

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18. **(Original)** The method of claim 12, wherein (c) comprises:
- (i) determining a notch frequency; and
 - (ii) selecting a notch depth.
19. **(Original)** The method of claim 18, wherein (ii) comprises:
- (1) increasing the notch depth by an incremental amount.
20. **(Original)** The method of claim 19, wherein (1) further comprises:
- (2) repeating (1) until the notch depth reaches a predetermined maximum value.
21. **(Original)** The method of claim 19, wherein (1) further comprises:
- (2) repeating (1) until the first acoustic feedback component is ameliorated.
22. **(Previously Presented)** The method of claim 12, further comprising:
- (f) receiving, by the second channel element, the first indicator from the first channel element;
 - (g) determining that a predetermined time has elapsed while waiting for the first set of filter parameters from the first channel element; and
 - (h) in response to (g), executing a corrective action.
23. **(Original)** A computer-readable medium having computer-executable instructions for performing the method recited in claim 12.
24. **(Original)** A computer-readable medium having computer-executable instructions for performing the method recited in claim 13.

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25. (Original) A computer-readable medium having computer-executable instructions for performing the method recited in claim 14.

26. (Currently Amended) A channel element of an acoustic system comprising:

a first adaptive notch filter that processes a first acoustic signal from a performance microphone and that detects a first acoustic feedback component that corresponds to a first feedback path between the performance microphone and at least one speaker, the performance microphone and an acoustic source of the performance microphone being on a same performance stage; and

a second adaptive notch filter that processes a second acoustic signal and that detects a second acoustic feedback component that corresponds to a second feedback path between the performance microphone and the at least one speaker,

wherein first adaptive processing is performed by the first adaptive notch filter in parallel with second adaptive processing performed by the second adaptive notch filter and wherein one of the adaptive notch filters continues to detect an associated acoustic feedback component while a second of the adaptive notch filters updates a filter configuration of a corresponding operative filter.